

**THE 1993 NSCG REINTERVIEW:  
INVESTIGATION OF CASES WITH UNCERTAIN  
NON-SCIENCE/ENGINEERING STATUS**

**Prepared by:**

**James M. Lessard  
John M. Bushery  
Quality Assurance and Evaluation Branch  
Demographic Statistical Methods Division  
Bureau of the Census**

## I. Summary

### A. Purpose

The reinterview of the National Survey of College Graduates (NSCG) found that 4.6 percent of the respondents changed from scientist and engineer (S&E) status to non-S&E status, and vice-versa. People counted as non-S&E might really be S&E. This situation can cause undercoverage in the 1995 NSCG, which will target scientists and engineers.

This report discusses the job and education categories likely to suffer from "uncertain" responses in the NSCG. Our analysis does not indicate which cases were in fact misclassified. A more detailed and probing interview of the "uncertain " cases is needed to determine the respondent's "true" S&E status.

This analysis concentrated on the possible undercoverage in the 1995 NSCG resulting from the respondents erroneously classified as non-S&E in 1993. We did not address the corresponding question of respondents erroneously classified as S&E.

### B. Major Findings

We estimate that about 4,189 or 6.6 percent of the non-S&E respondents in the NSCG would change their status to S&E if reinterviewed. Similarly, 4,123 or 4.7 percent of the S&E respondents would change their status to non-S&E if reinterviewed. These estimates are weighted to NSCG sample level from the 40 reinterview cases that went from non-S&E status to S&E and 38 cases that went from S&E status to non-S&E in the reinterview (see Attachments E and F).

Our analysis of the inconsistent reporting of non-S&E status and the National Science Foundation's (NSF) subject matter review identified 9 non-S&E job and 12 non-S&E education categories likely to be mistakenly used instead of the appropriate S&E job or education category. Attachment A lists these job and education categories.

These 21 "uncertain" job and education categories contain 6,362 NSCG cases. If we interview them in 1995, we can expect about 27 percent or fewer to change from non-S&E to S&E status.

### C. Recommendation

We recommend interviewing in 1995 the 78 cases in which the reinterview found inconsistent reporting of overall S&E status. These 78 cases should give us enough information to guide research to improve the questionnaire for the next decade's NSCG. The 40 non-S&E cases are few enough that we may be able to have our cognitive experts debrief them.

An alternative would be to interview a sample of the 6,362 respondents with uncertain non-S&E in 1995. Use a detailed, probing interview to determine their true S&E status for 1993. Conduct a similar interview with the respondents with uncertain S&E status. Under this option, we could include all or a sample of the 6,362 cases in the 1995 NSCG estimates after the appropriate weighting adjustments are developed. Because respondents erroneously classified as S&E will be interviewed in the 1995 NSCG, we

need not add sample to investigate these cases. But these respondents would require a special detailed probing interview to verify 1993 job or degrees before 1993 as S&E.

We recommend against this option because the yield of interviewing the 6,362 cases in "uncertain" job and education categories is too small. Only 27 percent or fewer are likely to report a different S&E status if we interview them in 1995. DSMD believes that survey resources will be better spent addressing other coverage and non-response issues which will arise in the 1995 survey.

If the NSF wants to pursue this alternative, the Census Bureau and the NSF can work out the details.

## **II. Methodology and Detailed Results**

This analysis was exploratory in nature and the process we followed is closely connected to our findings at each step. This section combines the description of our methodology and the discussion of our results.

The NSCG reinterview sample design and methodology will be fully described in the final response variance report.

### **A. S&E Response Variance Results**

The consistency of overall S&E and non-S&E classification was good, with a GDR of 4.6 percent (3.8%, 5.6%) and an index of inconsistency of 16.0 (13.3, 19.3). However, because S&E status is a criterion for inclusion in the 1995 NSCG, respondents incorrectly reporting themselves as non-S&E may be wrongly excluded from the 1995 survey.

Table 1 shows the Gross Difference Rate (GDR) -- the percentage of respondent changing into or out of non-S&E status in the reinterview, overall and for each question. Attachment G contains the corresponding cross-tabulations for these estimates.

TABLE 1 Rates of Inconsistent Response (GDR) to Questions Used to Assign S&E Status

Question	Number of respondents asked this question	Percentage non-S&E in RI	GDR for non-S&E
Overall non-S&E status	1683	17.5 (15.9, 19.0)	4.6 (3.8, 5.6)
A6 - last job	218	51.8 (46.3, 57.4)	10.1 (7.4, 14.1)
A15 - principle job	1446	42.7 (40.5, 44.8)	12.6 (11.2, 14.1)
A35 - second job	146	69.2 (62.9, 75.5)	6.8 (4.1, 11.5)
D6 most recent -major	1661	37.4 (35.4, 39.3)	6.7 (5.7, 7.8)
D6 most recent - minor	520	40.4 (36.8, 43.9)	10.8 (8.8, 13.3)
D6 second most recent - major	827	28.7 (26.1, 31.2)	6.3 (5.0, 7.9)
D6 second most recent - minor	259	33.6 (28.8, 38.4)	8.5 (6.0, 12.0)
D6 first B. A. - major	219	27.9 (22.9, 32.8)	3.7 (2.1, 6.5)
D6 first B. A. - minor	82	46.3 (37.3, 55.4)	8.5 (4.6, 15.7)

B. Identify the Uncertain non-S&E Job and Education Categories

- We used the NSF's criteria (see Attachments B and C) to determine S&E status for the original and reinterview responses to each of the job and education questions.
- We used the best job and education codes available to determine S&E status. If DPD coders assigned a code to the response, we used that code. If no DPD code was available, we used the respondent's self-code for that question.
- We determined an overall S&E status in the original and reinterview survey using this criterion that the NSF provided:

If a respondent's answer to any of the nine job and education questions listed below fell into an S&E category, consider that person S&E. If none of respondent's job or education responses belonged to an S&E category, consider that person non-S&E. The nine questions are:

- last job (A6)
  - principle job (A15)
  - second job (A35)
  - most recent degree - major (D6 column 1)
  - most recent degree - second major or minor (D6 column 1)
  - second most recent degree - major (D6 column 2)
  - second most recent degree - second major or minor (D6 column 2)
  - first bachelor's degree - major (D6 column 3)
  - first bachelor's degree - second major or minor (D6 column 3)
- We used overall S&E status to find the respondents who switched from S&E to non-S&E and vice-versa. Seventy-eight respondents of the 1,685 completed reinterviews switched S&E status. These cases were too few to let us identify the uncertain non-S&E job and education categories likely to be mistakenly assigned to a S&E job or educational specialty.
  - We compared original and reinterview S&E status for the nine questions listed above and found 380 respondents who switched into or out of S&E status for at least one of the questions.

We examined the original and reinterview responses to the nine job and education questions for each of these 380 cases. We found these reasons why S&E status for these job and education questions changed:

- Same or similar verbal response but different job and education codes.
- No response in original, but a response in reinterview or vice-versa.
- Completely different responses in original and reinterview.

Only the first reason represents job or education responses where S&E and non-S&E status could be confused. The last two reasons for changes are the result of different responses in the original survey and the reinterview.

- From this examination, we preliminarily identified 48 non-S&E job and education categories likely to be misclassified between S&E and non-S&E (see Attachment D).

This list includes some job and education categories that did not actually change status, but resembled another non-S&E category which did show changes to or from an S&E category between the original and the reinterview. For example, because physical science technologists and technicians (job code 197) showed changes to or from chemists (job code 193), we listed math science technologists and technicians (job code 175) as at-risk of misclassification. They actually might be mathematicians (job code 172).

We also used intuitive judgment to include some job and education categories which showed no changes between non-S&E and S&E and did not resemble categories which displayed changes. For example, health practitioners like dentists (job code 111) require scientific training, so we included this job classification as "uncertain non-S&E."

C. Estimate the Number of Uncertain non-S&E Cases

1. Determine non-S&E Status in Full Sample

We used the procedure described in part B to find an overall S&E status for each NSCG respondent, based on original survey responses.

Table 2 shows the distribution of S&E and non-S&E for all NSCG respondents (Mail, CATI and personal visit).

TABLE 2. Distribution of 1993 NSCG Sample by S&E Status

Status	Number of Respondents
Scientist and Engineers	87,001
Non-Scientist and Engineers	63,704
Total	150,705

2. Determine Uncertain non-S&E Cases

We found 22,074 of the 63,704 non-S&E cases reported one of the 48 uncertain job or education categories. These respondents are candidates to interview in the 1995 survey.

To avoid double-counting cases with two or more "uncertain" categories, we counted only each case's "first occurrence" of an uncertain job or education response, in this order:

- A6 last job
- A15 principle job
- A35 second job A35
- D6-1 most recent degree, major
- D6-1 most recent degree, second major or minor
- D6-2 second most recent degree, major
- D6-2 second most recent degree, second major or minor
- D6-3 first bachelor's degree, major
- D6-3 first bachelor's degree, second major or minor

For examples:

- We counted a respondent who reported an uncertain job category in A-15 and an uncertain education category in D6-1, minor, under A-15 and not under D6-1, minor.
- We counted a respondent who reported an uncertain educational categories in D6-1, minor and in D6-3, major under D6-1 minor.

Table 3A shows 14,218 cases answered with one of the uncertain job categories in one of the job questions A-6, A-15 and A-35.

The column definitions for Tables 3A and 3B are:

- job code refers to the uncertain job code
- switch count is the number of times that a respondent changed into non-S&E for this code in the reinterview sample.
- total is the number of times each job or education category appears in each question.
- A-6, A-15, A-35 are job questions
- D6-1 Major through D6-3 Minor are education questions associated with college degrees.

Table 3A. UNCERTAIN JOB CODES FOR NON-S&E CASES

JOB CODE	SWITCH COUNT	TOTAL	A-6	A-15	A-35
Total	127	14218	2213	11601	404
026	4	76	11	64	1
051	29	748	74	665	9
070	10	861	146	675	40
081	1	809	99	696	14
100	6	261	37	218	6
101	1	162	36	121	5
102	1	21	7	12	2
103	6	185	29	151	5
104	0	11	1	10	0
110	3	251	21	140	90
111	20	3110	440	2652	18
112	11	3524	629	2841	54
113	11	986	159	812	15
114	5	645	131	441	73
171	0	22	5	16	1
175	0	5	0	5	0
197	5	46	7	37	2
240	13	1618	245	1344	29
253	1	668	103	545	20
296	0	209	33	156	20

Table 3B shows 7,856 cases answered at least one of the six education questions with an uncertain education responses.

Table 3B. UNCERTAIN EDUCATION CODES FOR NON-S&E CASES

EDUC CODE	SWITCH COUNT	TOTAL	D6-1 Major	D6-1 Minor	D6-2 Major	D6-2 Minor	D6-3 Major	D6-3 Minor
Total	172	7856	5046	1626	787	281	82	34
602	6	125	110	4	8	1	2	0
610	4	380	321	21	32	2	4	0
652	0	21	15	4	2	0	0	0
655	10	1058	486	396	89	69	15	3
658	3	518	231	206	50	25	4	2
672	8	124	54	45	14	9	0	2
675	1	50	17	27	4	2	0	0
702	0	49	37	9	3	0	0	0
703	12	474	316	77	61	16	2	2
706	13	223	89	68	38	15	9	4
709	10	302	100	112	34	39	8	9
711	10	1632	1043	357	153	59	13	7
751	19	171	140	5	22	2	2	0
752	10	256	200	16	32	5	3	0
753	11	170	145	9	14	0	2	0
754	11	170	128	22	17	1	1	1
781	0	202	155	18	22	3	4	0
782	0	207	153	38	13	3	0	0
783	0	12	8	1	3	0	0	0
784	5	111	98	4	9	0	0	0
785	5	61	35	13	7	1	3	2
786	6	155	139	5	10	0	1	0
787	3	329	288	6	32	1	2	0
788	2	96	85	1	10	0	0	0
789	0	108	77	16	13	2	0	0
790	0	87	63	13	6	5	0	0
791	7	254	121	83	31	15	2	2
910	16	511	392	50	58	6	5	0

3. These 22,074 cases are too many to include in the 1995 survey. We met with the NSF on September 7th to review our findings to this point. The NSF decided to eliminate these job and education categories from our "uncertain" list.

Job Categories:

- architects (081)
- surveyors (104)
- farmers (110)
- health occupations (111-114)
- actuaries (171)

- secondary teachers for computer, math or science (253)
- other natural sciences teachers (296).

Education Categories:

- architecture/environmental design (610)
- actuarial sciences (652)
- marketing research (658)
- mathematics teacher education (706)
- science teacher education (709)
- special education (711)
- health professions and related sciences (781-791)

The NSF considered respondents in these categories unlikely to belong to a category that the NSF considers part of S&E. After deleting these categories, 6,362 cases of uncertain non-S&E job and education responses remained. Table 4 shows the final 21 non-S&E categories remaining and the number of cases in each category.

The NSF also decided to eliminate any case reporting an uncertain education specialty only in the minor (or second major) degree questions.

Only 17 of the 40 reinterview cases which changed from non-S&E to S&E are in these 21 non-S&E job and education categories. Weighting these cases to the NSCG sample level, we estimate that only 1698, or fewer, of the 6,362 cases will report S&E status in 1995.

TABLE 4 Final List of Uncertain Job and Education Codes

TYPE CODE J/E	CODE	SWITCH COUNT	TOTAL	UNCERTAIN			Non-S&E CASES		
				A-6	A-15	A-35	D6-1 Major	D6-2 Major	D6-3 Major
TOTAL		179	6362	592	3292	99	2025	322	32
J	026	4	76	11	64	1			
J	051	29	748	74	665	9			
J	070	10	861	146	675	40			
J	100	6	261	37	218	6			
J	101	1	162	36	121	5			
J	102	1	21	7	12	2			
J	103	6	185	29	151	5			
J	175	0	5	0	5	0			
J	197	5	46	7	37	2			
J	240	13	1618	245	1344	29			
E	602	6	120				110	8	2
E	655	10	590				486	89	15
E	672	8	68				54	14	0
E	675	1	21				17	4	0
E	702	0	40				37	3	0
E	703	12	379				316	61	2
E	751	19	164				140	22	2
E	752	10	235				200	32	3
E	753	11	161				145	14	2
E	754	11	146				128	17	1
E	910	16	455				392	58	5

## Final list of Uncertain Job Code Descriptions

<u>Code</u>	<u>Description</u>
026	Technologists/technicians in the biological/life
051	Computer programmers (business, scientific, process control)
070	Counselors, Educational and Vocational
081	Architects
100	Electrical, electronic, industrial, mechanical
101	Drafting occupations, including computer drafting
102	Surveying and mapping
103	Other engineering technologists and technicians
175	Technologists/technicians in the mathematical sciences
197	Technologists/technicians in the physical sciences
240	Social Workers

## Final list of Uncertain Education Code Descriptions

<u>Code</u>	<u>Description</u>
602	Other agricultural business & production
655	Business/managerial economics
672	Computer programming
675	Data processing technology
702	Computer teacher education
703	Counselor education/guidance services
751	Electrical and electronic technologies
752	Industrial production technologies
753	Mechanical engineering-related technologies
754	Other engineering-related technologies
910	Social Work

Science & Engineering Job Codes1. Biological/Life Scientists

- 021 Agricultural and food scientists
- 022 Biochemists and biophysicists
- 023 Biological scientists (e.g., botanists, ecologists, zoologists)
- 024 Forestry, conservation scientists
- 025 Medical scientists (excluding practitioners)

2. Computer Occupations

- 052 Computer system analysts
- 053 Computer scientists, except system analysts
- 054 Information systems scientists or analysts

3. Engineers

- 082 Aeronautical, aerospace, astronautical
- 083 Agricultural
- 084 Bioengineering and biomedical
- 085 Chemical
- 086 Civil, including architectural and sanitary
- 087 Computer engineer - hardware
- 088 Computer engineer - software
- 089 Electrical, electronic
- 090 Environmental
- 091 Industrial
- 092 Marine engineer or naval architect
- 093 Materials or metallurgical
- 094 Mechanical
- 095 Mining or geological
- 096 Nuclear
- 097 Petroleum
- 098 Sales

4. Mathematical Scientists

- 172 Mathematicians
- 173 Operations research analysts, modelling
- 174 Statisticians

5. Physical Scientists

- 191 Astronomers
- 192 Atmospheric and space scientists
- 193 Chemists, except biochemists
- 194 Geologists, including earth scientists
- 195 Oceanographers
- 196 Physicists

6. Social Scientists

- 231 Anthropologists
- 232 Economists
- 233 Historians, science and technology
- 235 Political scientists
- 236 Psychologists, including clinical
- 237 Sociologists

7. Postsecondary Teachers/Professors - S&E

- 271 Agriculture
- 273 Biological Sciences
- 275 Chemistry
- 276 Computer Science
- 277 Earth, Environmental, and Marine Science
- 278 Economics
- 280 Engineering
- 286 Mathematical Sciences
- 287 Medical Science
- 289 Physics
- 290 Political Science
- 291 Psychology
- 293 Sociology

8. S&E Residuals

- 027 Other biological/life scientists
- 055 Other computer, information science occupations
- 099 Other engineers
- 176 Other mathematical scientists
- 198 Other physical scientists
- 238 Other social scientist
- 297 Other natural sciences, postsecondary teachers
- 298 Other social sciences, postsecondary teachers

Non-Science & Engineering Job Codes1. Management & Related Occupations

- 141 Top and mid-level managers, executives, administrators (people who manage other managers)
- 151 Accountants auditors, and other financial specialists
- 152 Personnel, training, and labor relations specialists

2. Scientific Technologists and Technicians

- 026 Technologists/technicians in the biological/life
- 051 Computer programmers (business, scientific, process control)
- 175 Technologists/technicians in the mathematical sciences
- 197 Technologists/technicians in the physical sciences

3. Engineering & Related Technologists and Technicians

- 081 Architects
- 100 Electrical, electronic, industrial, mechanical
- 101 Drafting occupations, including computer drafting
- 102 Surveying and mapping
- 104 Surveyors

4. Teachers(except postsecondary), Counselors (Educational & Vocational), Librarians, Archivists & Curators

- 070 Counselors, Educational and Vocational
- 130 Librarians, Archivists, Curators
- 251 Pre-kindergarten and kindergarten
- 252 Elementary
- 253 Secondary - computer, math or sciences
- 254 Secondary - social sciences
- 255 Secondary - other subjects
- 256 Special education - primary and secondary

5. Postsecondary Teachers/Professors - non-S&E

- 272 Art, Drama, and Music
- 274 Business Commerce and Marketing
- 279 Education
- 281 English
- 282 Foreign Language
- 283 History
- 284 Home Economics
- 285 Law
- 288 Physical Education
- 292 Social Work
- 294 Theology
- 295 Trade and Industrial

6. Service, Trade, Operative & Related Occupations
- 221 Food Preparation and Service (e.g., cooks, waitresses, bartenders)
  - 222 Protective services (e.g., fire fighters, police, guards)
  - 401 Construction trades, miners and well drillers
  - 402 Mechanics and repairers
  - 403 Precision/production occupations (e.g., metal workers, woodworker, butchers, bakers, printing occupations, tailors, shoemakers, photographic process)
  - 404 Operators and related occupations (e.g., machine set-up, machine operators and tenders, fabricators, assemblers)
  - 405 Transportation/material moving occupations
7. Clerical/Administrative Support/Sales
- 031 Accounting clerks, bookkeepers
  - 032 Secretaries, receptionists, typists
  - 200 Insurance, securities, real estate, and business services
  - 201 Sales Occupations - Commodities Except Retail (e.g., industrial machinery/equipment/supplies, medical and dental equipment/supplies)
  - 202 Sales Occupations - Retail (e.g. furnishings, clothing, motor vehicles, cosmetics)
8. Health & Social Related Occupations
- 040 Clergy and Other Religious Workers
  - 111 Diagnosing/Treating Practitioners (e.g., dentists, optometrists, physicians, psychiatrists, podiatrists, surgeons, veterinarians)
  - 112 Registered nurses, pharmacists, dieticians, therapists, physician assistants
  - 113 Health Technologists and Technicians (e.g., dental hygienists, health record technologists/technicians, licensed practical nurses, medical or laboratory technicians, radiologic technologists/technicians)
  - 120 Lawyers, Judges
  - 234 Historians, except science and technology
  - 240 Social Workers
9. Other Non-S&E
- 010 Artists, Broadcasters, Editors, Entertainers, Public Relations Specialists, Writers
  - 033 Other administrative (e.g., record clerks, telephone operators)
  - 110 Farmers, Foresters and Fishermen
  - 103 Other engineering technologists and technicians
  - 114 Other health occupations
  - 153 Other management related occupations
  - 171 Actuaries
  - 203 Other marketing and sales occupations
  - 223 Other services occupations, except health
  - 257 Other precollegiate Teachers
  - 296 Other health specialties
  - 299 Other postsecondary
  - 501 Teacher or Trainer, other than in school

10. Other Other

500 Other occupations not listed

Science & Engineering Educational Codes1. Agriculture sciences, including agriculture economics

- 601 Agriculture, economics
- 605 Animal sciences
- 606 Food sciences/technology
- 607 Plant sciences

2. Biological/Life sciences & related sciences

- 631 Biochemistry and biophysics
- 632 Biology, general
- 633 Botany
- 634 Cell and molecular biology
- 635 Ecology
- 636 Genetics, animal and plant
- 637 Microbiology
- 638 Nutritional sciences
- 639 Pharmacology, human and animal
- 640 Physiology, human and animal
- 641 Zoology, general
- 680 Environmental science studies
- 681 Forestry sciences (except management)

3. Engineering

- 721 Aerospace, aeronautical, astronautical
- 722 Agricultural
- 723 Architectural
- 724 Bioengineering and biomedical
- 725 Chemical
- 726 Civil
- 727 Computer/systems
- 728 Electrical, electronics, communications
- 729 Engineering sciences, mechanics, physics
- 730 Environmental
- 731 General
- 732 Geophysical
- 733 Industrial
- 734 Materials, including ceramics and textiles
- 735 Mechanical
- 736 Metallurgical
- 737 Mining and minerals
- 738 Naval architecture and marine
- 739 Nuclear
- 740 Petroleum

4. Physical sciences
  - 871 Astronomy and astrophysics
  - 872 Atmospheric sciences and meteorology
  - 873 Chemistry
  - 874 Earth sciences
  - 875 Geology
  - 876 Geological sciences
  - 877 Oceanography
  - 878 Physics
  
5. Social sciences & related sciences
  - 620 Area/Ethnic Studies
  - 771 Linguistics
  - 830 Library science
  - 861 Philosophy of science
  - 921 Anthropology and archeology
  - 923 Economics
  - 924 Geography
  - 925 History of science
  - 928 Political science and government
  - 929 Sociology
  
6. Mathematics
  - 841 Applied
  - 842 Mathematics, general
  - 843 Operations research
  - 844 Statistics
  
7. Computer and Information sciences
  - 671 Computer/information sciences, general
  - 673 Computer science
  - 674 Computer systems analysis
  
8. Psychology
  - 704 Educational
  - 891 Clinical
  - 892 Counseling
  - 893 Experimental
  - 894 General
  - 895 Industrial/Organizational
  - 896 Social

9. S&E Residuals

608	Other agricultural sciences
642	Other biological sciences
677	Other computer and information sciences
682	Other conservation/renewable natural resources
741	Other engineering
845	Other mathematics
879	Other physical sciences
897	Other psychology
930	Other social sciences
991	MPR-S&E

Non-Science & Engineering Educational Codes1. Business Management/Administrative Services & Communications

- 610 Architecture/Environmental design (for architectural engineering)
- 651 Accounting
- 652 Actuarial science
- 653 Business administration and management
- 654 Business, general
- 655 Business/managerial economics
- 656 Business marketing/marketing management
- 657 Financial management
- 658 Marketing research
- 661 Communications, general
- 662 Journalism
- 843 Operations research

2. Computer and information services

- 672 Computer programming
- 675 Data processing technology
- 676 Information services and systems

3. Education

- 701 Administration
- 702 Computer teacher education
- 703 Counselor education/guidance services
- 705 Elementary teacher education
- 706 Mathematics teacher education
- 707 Physical education/coaching
- 708 Pre-elementary teacher education
- 709 Science teacher education
- 710 Secondary teacher education
- 711 Special education
- 712 Social science teacher education

4. Health Professions, Social and Related

- 690 Criminal Justice/Protective Services
- 781 Audiology and speech pathology
- 782 Health services administration
- 783 Health/medical assistants
- 784 Health/medical technologies
- 785 Medical preparatory programs (e.g., pre-dentistry, pre-medical, pre-veterinary)
- 786 Medicine (e.g., dentistry, optometry, osteopathic, podiatry, veterinary)
- 787 Nursing (4 years or longer program)
- 788 Pharmacy
- 789 Physical therapy and other rehabilitation/therapeutic services
- 790 Public health (including environmental health and epidemiology)

- 810 Law/Pre-Law/Legal Studies
  - 910 Social Work
5. Liberal Arts/General Studies and Others
- 760 English Language and Literature/Letters
  - 820 Liberal Arts/General Studies
  - 901 Public Administration
  - 902 Public policy studies
  - 922 Criminology
  - 926 History, other
  - 927 International relations
  - 941 Dramatic arts
  - 942 Fine arts, all fields
  - 943 Music, all fields
6. Non-S&E Engineering-Related Technologies
- 751 Electrical and electronic technologies
  - 752 Industrial production technologies
  - 753 Mechanical engineering-related technologies
  - 754 Other engineering-related technologies
7. Non-S&E Residuals
- 602 Other agricultural business & production
  - 659 Other business management/administrative services
  - 663 Other Communications
  - 713 Other education
  - 772 Other foreign languages and literature
  - 791 Other health/medical sciences
  - 800 Home Economics
  - 850 Parks, Recreation, Leisure, and Fitness Studies
  - 862 Other philosophy, religion, theology
  - 903 Other public affairs
  - 944 Other visual and performing arts
8. Other Other
- 995 Other fields (Not Listed) or MPR non-S&E

## Preliminary List of Uncertain Job Codes

<u>Code</u>	<u>Description</u>
026	Technologists/technicians in the biological/life
051	Computer programmers (business, scientific, process control)
070	Counselors, Educational and Vocational
081	Architects
100	Electrical, electronic, industrial, mechanical
101	Drafting occupations, including computer drafting
102	Surveying and mapping
103	Other engineering technologists and technicians
104	Surveyors
110	Farmers, Foresters and Fishermen
111	Diagnosing/Treating Practitioners (e.g., dentists, optometrists, physicians, psychiatrists, podiatrists, surgeons, veterinarians)
112	Registered nurses, pharmacists, dieticians, therapists, physician assistants
113	Health Technologists and Technicians (e.g., dental hygienists, health record technologists/technicians, licensed practical nurses, medical or laboratory technicians, radiologic technologists/technicians)
114	OTHER health occupations
171	Actuaries
175	Technologists/technicians in the mathematical sciences
197	Technologists/technicians in the physical sciences
240	Social Workers
253	Secondary - computer, math or sciences
296	Other health specialties

## Preliminary List of Uncertain Education Codes

<u>Code</u>	<u>Description</u>
602	Other agricultural business & production
610	Architecture/Environmental design (for architectural engineering)
652	Actuarial science
655	Business/managerial economics
658	Marketing research
672	Computer programming
675	Data processing technology
702	Computer teacher education
703	Counselor education/guidance services
706	Mathematics teacher education
709	Science teacher education
711	Special education
751	Electrical and electronic technologies
752	Industrial production technologies
753	Mechanical engineering-related technologies
754	Other engineering-related technologies
781	Audiology and speech pathology
782	Health services administration
783	Health/medical assistants
784	Health/medical technologies
785	Medical preparatory programs (e.g., pre-dentistry, pre-medical, pre-veterinary)
786	Medicine (e.g., dentistry, optometry, osteopathic, podiatry, veterinary)
787	Nursing (4 years or longer program)
788	Pharmacy
789	Physical therapy and other rehabilitation/therapeutic services
790	Public health (including environmental health and epidemiology)
791	Other health/medical sciences
910	Social Work



Weighted estimate of NSCG respondents who change from S&E in the original  
to non-S&E status in the reinterview

Reinterview Stratum	Original Code	Reinterview Code	Reinterview Weight <sup>2</sup>
Social Scientist	894	Blank	5.29
Non-S/E	238	500	294.12
Math/ CS	052	051	12.15
Social Scientist	861	862	5.29
Physical Scientist	632	Blank	8.98
Math/ CS	173	151	12.15
Non-S/E	929	Blank	294.12
Social Scientist	620	820	5.29
Engineers	098	153	29.67
Non-S/E	842	706	294.12
Math/ CS	098	201	12.15
Engineers	055	153	29.67
Engineers	923	654	29.67
Non-S/E	894	Blank	294.12
Social Scientist	923	659	5.29
Math/ CS	873	709	12.15
Non-S/E	286	255	294.12
Non-S/E	923	Blank	294.12
Engineers	928	810	29.67
Social Scientist	873	Blank	5.29
Physical Scientist	632	786	8.98
Non-S/E	198	202	294.12
Social Scientist	232	203	5.29
Social Scientist	929	910	5.29
Social Scientist	930	926	5.29
Social Scientist	055	200	5.29
Non-S/E	928	Blank	294.12
Engineers	099	103	29.67
Non-S/E	843	Blank	294.12
Non-S/E	642	701	294.12
Non-S/E	929	910	294.12
Physical Scientist	021	223	8.98
Non-S/E	273	282	294.12
Social Scientist	892	Blank	5.29
Math/ CS	923	655	12.15
Social Scientist	098	203	5.29
Non-S/E	842	772	294.12
Social Scientist	892	Blank	5.29
Estimate of Original NSCG Respondents			4123.08

2

This weight is the number of NSCG original respondents represented by this NSCG reinterview respondent

A6. Using the Job Codes (List A pages 14-15) choose the code that BEST describes the work you were doing on your last job.

ORIGINAL RESPONSE (FINA6R1)					
	TOTAL	N/A	SUBTOTAL	Science and Engineering	Non-Science and Engineering
REINTERVIEW RESPONSE (RA6R1)					
TOTAL	221	1	220	112	108
N/A	2	0	2	1	1
REINTERVIEW NI	0	0	0	0	0
SUBTOTAL	219	1	218	111	107
Science and Engineering	105	0	105	97	8
Non-Science and Engineering	114	1	113	14	99

25

	Science and Engineering	Non-Science and Engineering
Original Percentage	50.9	49.1
Lower CI for Original %	45.3	43.5
Upper CI for Original %	56.5	54.7
Reinterview Percentage	48.2	51.8
Lower CI for Reinterview %	42.6	46.3
Upper CI for Reinterview %	53.7	57.4
Net Difference Rate	2.8	-2.8
Lower CI for Net Difference Rate	-0.8	-6.3
Upper CI for Net Difference Rate	6.3	0.8
Gross Difference Rate	10.1	10.1
Lower CI for Gross Difference Rate	7.4	7.4
Upper CI for Gross Difference Rate	14.1	14.1
Index of Inconsistency	20.2	20.2
Lower CI for Index of Inconsistency	14.7	14.7
Upper CI for Index of Inconsistency	28.1	28.1
Simple Response Variance	0.0505	0.0505
Total Variance	0.2502	0.2502
Overall Gross Difference Rate	10.1	
Lower CI for Overall GDR	6.7	
Upper CI for Overall GDR	13.4	
Aggregate Index of Inconsistency	20.2	
Lower CI for Aggregate Index	14.7	
Upper CI for Aggregate Index	28.1	

A15. Using the Job Codes (List A pages 14-15) choose the code that best describes the work you were doing on your principal job during the week of April 15.

ORIGINAL RESPONSE (FINA15R1)					
	TOTAL	N/A	SUBTOTAL	Science and Engineering	Non-Science and Engineering
REINTERVIEW RESPONSE (RA15R1)					
TOTAL	1685	230	1455	849	606
N/A	232	223	9	4	5
REINTERVIEW NI	0	0	0	0	0
SUBTOTAL	1453	7	1446	845	601
Science and Engineering	832	3	829	746	83
Non-Science and Engineering	621	4	617	99	518

	Science and Engineering	Non-Science and Engineering
Original Percentage	58.4	41.6
Lower CI for Original %	56.3	39.4
Upper CI for Original %	60.6	43.7
Reinterview Percentage	57.3	42.7
Lower CI for Reinterview %	55.2	40.5
Upper CI for Reinterview %	59.5	44.8
Net Difference Rate	1.1	-1.1
Lower CI for Net Difference Rate	-0.4	-2.6
Upper CI for Net Difference Rate	2.6	0.4
Gross Difference Rate	12.6	12.6
Lower CI for Gross Difference Rate	11.2	11.2
Upper CI for Gross Difference Rate	14.1	14.1
Index of Inconsistency	25.8	25.8
Lower CI for Index of Inconsistency	23.1	23.1
Upper CI for Index of Inconsistency	28.9	28.9
Simple Response Variance	0.0629	0.0629
Total Variance	0.2438	0.2438
Overall Gross Difference Rate	12.6	
Lower CI for Overall GDR	11.2	
Upper CI for Overall GDR	14.0	
Aggregate Index of Inconsistency	25.8	
Lower CI for Aggregate Index	23.1	
Upper CI for Aggregate Index	28.9	

A35. Using the Job Codes (List A, pages 14-15), choose the code that best describes the work you were doing on your second job during the week of April 15.

ORIGINAL RESPONSE (FINA35R1)					
	TOTAL	N/A	SUBTOTAL	Science and Engineering	Non-Science and Engineering
REINTERVIEW RESPONSE (RA35R1)					
TOTAL	1685	1508	177	50	127
N/A	1518	1487	31	7	24
REINTERVIEW NI	0	0	0	0	0
SUBTOTAL	167	21	146	43	103
Science and Engineering	49	4	45	39	6
Non-Science and Engineering	118	17	101	4	97

	Science and Engineering	Non-Science and Engineering
Original Percentage	29.5	70.5
Lower CI for Original %	23.2	64.3
Upper CI for Original %	35.7	76.8
Reinterview Percentage	30.8	69.2
Lower CI for Reinterview %	24.5	62.9
Upper CI for Reinterview %	37.1	75.5
Net Difference Rate	-1.4	1.4
Lower CI for Net Difference Rate	-5.1	-2.3
Upper CI for Net Difference Rate	2.3	5.1
Gross Difference Rate	6.8	6.8
Lower CI for Gross Difference Rate	4.1	4.1
Upper CI for Gross Difference Rate	11.5	11.5
Index of Inconsistency	16.3	16.3
Lower CI for Index of Inconsistency	9.7	9.7
Upper CI for Index of Inconsistency	27.2	27.2
Simple Response Variance	0.0342	0.0342
Total Variance	0.2106	0.2106
Overall Gross Difference Rate	6.8	
Lower CI for Overall GDR	3.4	
Upper CI for Overall GDR	10.3	
Aggregate Index of Inconsistency	16.3	
Lower CI for Aggregate Index	9.7	
Upper CI for Aggregate Index	27.2	

MOST RECENT DEGREE

D6Di\_2. Using the EDUCATION CODES (List B, pages 16-17), select the relevant degree code and title for your MAJOR FIELD

ORIGINAL RESPONSE (FIN12R1)					
	TOTAL	N/A	SUBTOTAL	Science and Engineering	Non-Science and Engineering
REINTERVIEW RESPONSE (RFIN12R1)					
TOTAL	1685	5	1680	1037	643
N/A	19	0	19	12	7
REINTERVIEW NI	0	0	0	0	0
SUBTOTAL	1666	5	1661	1025	636
Science and Engineering	1044	4	1040	977	63
Non-Science and Engineering	622	1	621	48	5

28

	Science and Engineering	Non-Science and Engineering
Original Percentage	61.7	38.3
Lower CI for Original %	59.7	36.3
Upper CI for Original %	63.7	40.3
Reinterview Percentage	62.6	37.4
Lower CI for Reinterview %	60.7	35.4
Upper CI for Reinterview %	64.6	39.3
Net Difference Rate	-0.9	0.9
Lower CI for Net Difference Rate	-1.9	-0.1
Upper CI for Net Difference Rate	0.1	1.9
Gross Difference Rate	6.7	6.7
Lower CI for Gross Difference Rate	5.7	5.7
Upper CI for Gross Difference Rate	7.8	7.8
Index of Inconsistency	14.2	14.2
Lower CI for Index of Inconsistency	12.2	12.2
Upper CI for Index of Inconsistency	16.6	16.6
Simple Response Variance	0.0334	0.0334
Total Variance	0.2352	0.2352
Overall Gross Difference Rate	6.7	
Lower CI for Overall GDR	5.7	
Upper CI for Overall GDR	7.7	
Aggregate Index of Inconsistency	14.2	
Lower CI for Aggregate Index	12.2	
Upper CI for Aggregate Index	16.6	

MOST RECENT DEGREE  
 D6D1\_4. Using the EDUCATION CODES (List B, pages 16-17), select the relevant degree code and title for your SECOND MAJOR OR MINOR FIELD

ORIGINAL RESPONSE (FIN14R1)					
	TOTAL	N/A	SUBTOTAL	Science and Engineer- ing	Non-Science and Engineer- ing
REINTERVIEW RESPONSE (RFIN14R1)					
TOTAL	1685	1041	644	370	274
N/A	1060	936	124	56	68
REINTERVIEW NI	0	0	0	0	0
SUBTOTAL	625	105	520	314	206
Science and Engineering	374	64	310	284	26
Non-Science and Engineering	251	41	210	30	180

29

	Science and Engineering	Non-Science and Engineering
Original Percentage	60.4	39.6
Lower CI for Original %	56.9	36.1
Upper CI for Original %	63.9	43.1
Reinterview Percentage	59.6	40.4
Lower CI for Reinterview %	56.1	36.8
Upper CI for Reinterview %	63.2	43.9
Net Difference Rate	0.8	-0.8
Lower CI for Net Difference Rate	-1.6	-3.2
Upper CI for Net Difference Rate	3.2	1.6
Gross Difference Rate	10.8	10.8
Lower CI for Gross Difference Rate	8.8	8.8
Upper CI for Gross Difference Rate	13.3	13.3
Index of Inconsistency	22.4	22.4
Lower CI for Index of Inconsistency	18.3	18.3
Upper CI for Index of Inconsistency	27.6	27.6
Simple Response Variance	0.0538	0.0538
Total Variance	0.2400	0.2400
Overall Gross Difference Rate	10.8	
Lower CI for Overall GDR	8.5	
Upper CI for Overall GDR	13.0	
Aggregate Index of Inconsistency	22.4	
Lower CI for Aggregate Index	18.3	
Upper CI for Aggregate Index	27.6	

SECOND MOST RECENT DEGREE  
 D6D2\_2. Using the EDUCATION CODES (List B, pages 16-17), select the relevant degree code and title for your MAJOR FIELD

ORIGINAL RESPONSE (FIN22R1)					
	TOTAL	N/A	SUBTOTAL	Science and Engineering	Non-Science and Engineering
REINTERVIEW RESPONSE (RFIN22R1)					
TOTAL	1685	818	867	603	264
N/A	830	790	40	15	25
REINTERVIEW NI	0	0	0	0	0
SUBTOTAL	855	28	827	588	239
Science and Engineering	606	16	590	563	27
Non-Science and Engineering	249	12	237	25	212

	Science and Engineering	Non-Science and Engineering
Original Percentage	71.1	28.9
Lower CI for Original %	68.5	26.3
Upper CI for Original %	73.7	31.5
Reinterview Percentage	71.3	28.7
Lower CI for Reinterview %	68.8	26.1
Upper CI for Reinterview %	73.9	31.2
Net Difference Rate	-0.2	0.2
Lower CI for Net Difference Rate	-1.7	-1.2
Upper CI for Net Difference Rate	1.2	1.7
Gross Difference Rate	6.3	6.3
Lower CI for Gross Difference Rate	5.0	5.0
Upper CI for Gross Difference Rate	7.9	7.9
Index of Inconsistency	15.3	15.3
Lower CI for Index of Inconsistency	12.2	12.2
Upper CI for Index of Inconsistency	19.3	19.3
Simple Response Variance	0.0314	0.0314
Total Variance	0.2050	0.2050
Overall Gross Difference Rate	6.3	
Lower CI for Overall GDR	4.9	
Upper CI for Overall GDR	7.7	
Aggregate Index of Inconsistency	15.3	
Lower CI for Aggregate Index	12.2	
Upper CI for Aggregate Index	19.3	

SECOND MOST RECENT DEGREE  
 D6D2\_4. Using the EDUCATION CODES (List B, pages 16-17), select the relevant degree code and title for your SECOND MAJOR OR MINOR FIELD

ORIGINAL RESPONSE (FIN24R1)					
	TOTAL	N/A	SUBTOTAL	Science and Engineering	Non-Science and Engineering
REINTERVIEW RESPONSE (RFIN241)					
TOTAL	1685	1366	319	204	115
N/A	1356	1296	60	36	24
REINTERVIEW NI	0	0	0	0	0
SUBTOTAL	329	70	259	168	91
Science and Engineering	213	41	172	159	13
Non-Science and Engineering	116	29	87	9	78

	Science and Engineering	Non-Science and Engineering
Original Percentage	64.9	35.1
Lower CI for Original %	60.0	30.3
Upper CI for Original %	69.7	40.0
Reinterview Percentage	66.4	33.6
Lower CI for Reinterview %	61.6	28.8
Upper CI for Reinterview %	71.2	38.4
Net Difference Rate	-1.5	1.5
Lower CI for Net Difference Rate	-4.6	-1.5
Upper CI for Net Difference Rate	1.5	4.6
Gross Difference Rate	8.5	8.5
Lower CI for Gross Difference Rate	6.0	6.0
Upper CI for Gross Difference Rate	12.0	12.0
Index of Inconsistency	18.8	18.8
Lower CI for Index of Inconsistency	13.3	13.3
Upper CI for Index of Inconsistency	26.7	26.7
Simple Response Variance	0.0425	0.0425
Total Variance	0.2256	0.2256
Overall Gross Difference Rate	8.5	
Lower CI for Overall GDR	5.6	
Upper CI for Overall GDR	11.3	
Aggregate Index of Inconsistency	18.8	
Lower CI for Aggregate Index	13.3	
Upper CI for Aggregate Index	26.7	

FIRST B. A. DEGREE  
 D6D3\_2. Using the EDUCATION CODES (List B, pages 16-17), select the relevant degree code and titles for your MAJOR FIELD

ORIGINAL RESPONSE (FIN32R1)					
	TOTAL	N/A	SUBTOTAL	Science and Engineering	Non-Science and Engineering
REINTERVIEW RESPONSE (RFIN32R1)					
TOTAL	1685	1442	243	175	68
N/A	1456	1432	24	15	9
REINTERVIEW NI	0	0	0	0	0
SUBTOTAL	229	10	219	160	59
Science and Engineering	167	9	158	155	3
Non-Science and Engineering	62	1	61	5	56

	Science and Engineering	Non-Science and Engineering
Original Percentage	73.1	26.9
Lower CI for Original %	68.1	22.0
Upper CI for Original %	78.0	31.9
Reinterview Percentage	72.1	27.9
Lower CI for Reinterview %	67.2	22.9
Upper CI for Reinterview %	77.1	32.8
Net Difference Rate	0.9	-0.9
Lower CI for Net Difference Rate	-1.3	-3.1
Upper CI for Net Difference Rate	3.1	1.3
Gross Difference Rate	3.7	3.7
Lower CI for Gross Difference Rate	2.1	2.1
Upper CI for Gross Difference Rate	6.5	6.5
Index of Inconsistency	9.2	9.2
Lower CI for Index of Inconsistency	5.2	5.2
Upper CI for Index of Inconsistency	16.3	16.3
Simple Response Variance	0.0183	0.0183
Total Variance	0.1989	0.1989
Overall Gross Difference Rate	3.7	
Lower CI for Overall GDR	1.6	
Upper CI for Overall GDR	5.7	
Aggregate Index of Inconsistency	9.2	
Lower CI for Aggregate Index	5.2	
Upper CI for Aggregate Index	16.3	

FIRST B. A. DEGREE

D6D3\_4. Using the EDUCATION CODES (List B, pages 16-17), select the relevant degree code and title for your SECOND MAJOR OR MINOR FIELD

ORIGINAL RESPONSE (FIN34R1)					
	TOTAL	N/A	SUBTOTAL	Science and Engineering	Non-Science and Engineering
REINTERVIEW RESPONSE (RFIN34R1)					
TOTAL	1685	1581	104	60	44
N/A	1583	1561	22	13	9
REINTERVIEW NI	0	0	0	0	0
SUBTOTAL	102	20	82	47	35
Science and Engineering	55	11	44	42	2
Non-Science and Engineering	47	9	38	5	33

	Science and Engineering	Non-Science and Engineering
Original Percentage	57.3	42.7
Lower CI for Original %	48.3	33.7
Upper CI for Original %	66.3	51.7
Reinterview Percentage	53.7	46.3
Lower CI for Reinterview %	44.6	37.3
Upper CI for Reinterview %	62.7	55.4
Net Difference Rate	3.7	-3.7
Lower CI for Net Difference Rate	-1.9	-9.2
Upper CI for Net Difference Rate	9.2	1.9
Gross Difference Rate	8.5	8.5
Lower CI for Gross Difference Rate	4.6	4.6
Upper CI for Gross Difference Rate	15.7	15.7
Index of Inconsistency	17.3	17.3
Lower CI for Index of Inconsistency	9.4	9.4
Upper CI for Index of Inconsistency	31.8	31.8
Simple Response Variance	0.0427	0.0427
Total Variance	0.2473	0.2473
Overall Gross Difference Rate	8.5	
Lower CI for Overall GDR	3.5	
Upper CI for Overall GDR	13.6	
Aggregate Index of Inconsistency	17.3	
Lower CI for Aggregate Index	9.4	
Upper CI for Aggregate Index	31.8	

The recoding of questions A6 and A15 and A35 and D6 columns 1-3 for Major and Minor field of studies into S/E and Non-S/E

ORIGINAL RESPONSE (FINAL)					
	TOTAL	N/A	SUBTOTAL	Science and Engineering	Non-Science and Engineering
REINTERVIEW RESPONSE (RFINAL)					
TOTAL	1685	0	1685	1389	296
N/A	2	0	2	2	0
REINTERVIEW NI	0	0	0	0	0
SUBTOTAL	1683	0	1683	1387	296
Science and Engineering	1389	0	1389	1349	40
Non-Science and Engineering	294	0	294	38	256

34

	Science and Engineering	Non-Science and Engineering
Original Percentage	82.4	17.6
Lower CI for Original %	80.9	16.1
Upper CI for Original %	83.9	19.1
Reinterview Percentage	82.5	17.5
Lower CI for Reinterview %	81.0	15.9
Upper CI for Reinterview %	84.1	19.0
Net Difference Rate	-0.1	0.1
Lower CI for Net Difference Rate	-1.0	-0.7
Upper CI for Net Difference Rate	0.7	1.0
Gross Difference Rate	4.6	4.6
Lower CI for Gross Difference Rate	3.8	3.8
Upper CI for Gross Difference Rate	5.6	5.6
Index of Inconsistency	16.0	16.0
Lower CI for Index of Inconsistency	13.3	13.3
Upper CI for Index of Inconsistency	19.3	19.3
Simple Response Variance	0.0232	0.0232
Total Variance	0.1446	0.1446
Overall Gross Difference Rate	4.6	
Lower CI for Overall GDR	3.8	
Upper CI for Overall GDR	5.5	
Aggregate Index of Inconsistency	16.0	
Lower CI for Aggregate Index	13.3	
Upper CI for Aggregate Index	19.3	